

REMARKS

Applicant requests favorable reconsideration and allowance of the subject application in view of the preceding amendments and the following remarks.

Claims 122-147 are presented for consideration in lieu of claims 45-52 and 105-121, which have been canceled without prejudice or disclaimer. Claims 122, 131 and 140 are independent. Support for these claims can be found in the original application, as filed. Therefore, no new matter has been added.

Applicant request favorable reconsideration and withdrawal of the rejections set forth in the above-noted Office Action.

Claims 105, 106, 108-114 and 117-120 were rejected under 35 U.S.C. § 102 as being anticipated by U.S. Patent No. 5,696,623 to Fujie et al. Claims 107, 115, 116 and 121 were rejected under 35 U.S.C. § 103 as being unpatentable over the Fujie et al. patent in view of U.S. Patent No. 5,995,263 to Tokuda et al. Claims 45-47, 49, 50 and 52 were rejected under 35 U.S.C. § 103 as being unpatentable over U.S. Patent No. 6,496,257 to Taniguchi et al. in view of the Tokuda et al. patent. Claims 48 and 51 were rejected under 35 U.S.C. § 103 as being unpatentable over the Taniguchi et al. patent in view of the Tokuda et al. patent as applied to claims 45-47, 49, 50 and 52, and further in view of the Fujie et al. patent. Claims 105-121 were rejected under 35 U.S.C. § 103 as being unpatentable over the Taniguchi et al. patent in view of the Fujie et al. patent. Applicant submits that the cited art, whether taken individually or in combination, does not teach or suggest many features of the present invention as previously recited in claims 45-52 and 105-121. Therefore, these rejections are respectfully traversed.

Nevertheless, Applicant submits that independent claims 122, 131 and 140, for example, as presented, amplify the distinctions between the present invention and the cited art.

In one aspect of the present invention, independent claim 122 recites an exposure apparatus including an optical system for directing light from a light source via a mask and for projecting a pattern of the mask onto a wafer, a barrel for accommodating therein at least a part of the optical system, a cover for suppressing diffusion of a gas in a space around an outermost one of surfaces of optical elements accommodated in the barrel, a supply system for supplying a gas into the space, the supply system having a supply port which faces to the outermost surface rather than in a direction perpendicular to a direction of an optical axis of the optical system, and an exhaust system for exhausting a gas from the space, the exhaust system having an exhaust port which is more distant from the outermost surface than is the supply port.

In another aspect of the present invention, independent claim 131 recites an exposure apparatus including an optical system for directing light from a light source via a mask and for projecting a pattern of the mask onto a wafer, a barrel for accommodating therein at least a part of the optical system, a supply system for supplying a gas into the barrel, an exhaust port for exhausting a gas from the barrel, a cover for suppressing diffusion of a gas in a space around an outermost one of surfaces of optical elements accommodated in the barrel, and a supply port for supplying, into the space, the gas exhausted from the barrel via the exhaust port.

In still another aspect of the present invention, independent claim 140 recites an exposure apparatus including an optical system for directing light from a light source via a mask and for projecting a pattern of the mask onto a wafer, a barrel for accommodating therein at least a part

of the optical system, a cover for suppressing diffusion of a gas in a space around an outermost one of surfaces of optical elements accommodated in the barrel, a supply system for supplying a gas into the space, the supply system having a supply port which faces in a direction according to a shape of the outermost surface so that the gas flows along the outermost surface, and an exhaust system for exhausting, from the space, the gas having traveled along the outermost surface.

Applicant submits that the cited art, whether taken individually or in combination, does not teach or suggest such features of the present invention, as recited in independent claims 122, 131 and 140.

The Fujie et al. patent shows an ultraviolet exposure apparatus in which substances contained in an atmosphere contacting a lens surface are reduced. Openings are formed in the wall of the lens barrel to allow the atmosphere to be replaced by a proper gas. The pure atmospheric gas may be a gas not containing oxygen, such as nitrogen gas, or clean air obtained by intentionally generating accumulations by applying ultraviolet light to source air. An ultraviolet light source is preferably cooled by a cooling system different from a cooling system of a lens optical system.

The Tokuda et al. patent shows a projection exposure apparatus in which an air conditioning device 49 for temperature adjustment is provided between a projection optical system 14A and a photosensitive substrate 17. This is shown in Figures 8, 12 and 13, and discussed at column 16, lines 31-43 of that patent. Applicant submits, however, that the Tokuda

et al. patent merely teaches a single air conditioning device. Accordingly, that patent teaches nothing regarding the use of a plurality of gas supply ports or a plurality of gas exhaust ports.

The Examiner relies on the Taniguchi et al. patent for showing an exposure apparatus that includes a projection optical system having a plurality of optical elements for projecting a pattern onto a predetermined plane, a barrel for accommodating the plurality of optical elements, gas supply means disposed between a predetermined plane and a final optical element, a gas supplying device for supplying a gas from one side of the projection optical system and a gas exhaust device disposed at the other side, opposite to the one side, for exhausting the gas.

Applicant submits, however, that none of the cited patents, whether taken individually or in combination, teaches or suggests the salient features of Applicant's present invention, as recited in independent claims 122, 131 and 140. Notably, the cited art is silent at least with respect to the features of an exhaust system for exhausting a gas from a space having an exhaust port which is more distant from an outermost surface than is the supply port (independent claim 122), a supply port being arranged to supply, into a space, gas exhausted from a barrel via an exhaust port (independent claim 131) or a supply system for supplying a gas into a space having a supply port which faces in a direction according to a shape of an outermost surface so that the gas flows along the outermost surface (independent claim 140). Accordingly, Applicant submits that the cited does not teach or suggest many features of the present invention, as recited in the independent claims, and, therefore, should not be read to anticipate or render obvious Applicant's present invention, as recited in those claims.


For the foregoing reasons, Applicant submits that the present invention, as recited in independent claims 122, 131 and 140, is patentably defined over the cited art.

Dependent claims 123-130, 132-139 and 141-147 also should be deemed allowable, in their own right, for defining other patentable features of the present invention in addition to those recited in their respective independent claims. Further individual consideration of these dependent claims is requested.

Applicant further submits that the instant application is in condition for allowance. Favorable reconsideration, withdrawal of the rejections set forth in the above-noted Office Action and an early Notice of Allowance are requested.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should be directed to our address listed below.

Respectfully submitted,



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